

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF THE CLAIMS:

1-10. (Canceled).

11. (Currently Amended) A gas sensor device, comprising:

a sensor chamber that receives via a diffusion barrier a gas to be analyzed; at least one pump cell situated between the sensor chamber and the gas to be analyzed, wherein the at least one pump cell is exposed to the gas to be analyzed and includes an outer pump electrode;

a measuring electrode situated in a reference-gas space;

a measuring cell situated between the sensor chamber and the reference-gas space, wherein the outer pump electrode of the pump cell exposed to the gas to be analyzed receives a pump current which depends on a measuring voltage that is applied to the measuring electrode situated in the reference-gas space; and

a constant current source for supplying the pump current, wherein:

the constant current source is at least one of: a) configured to be set to at least two values of the pump current[[;]] and b) configured for alternating operation with including ON phases and OFF phases, with the duration of the ON phases and OFF phases being specified; and

~~wherein for a fixed value of the pump current and a predefined duration of the ON phases and the OFF phases, the device is configured to predefine the number of ON phases and OFF phases.~~

12. (Previously Presented) The device as recited in Claim 11, wherein the constant current source specifies a positive polarity value and a negative polarity value for the pump current.

13. (Previously Presented) The device as recited in Claim 12, wherein the device is configured to determine an average of the pump current over a predefined measuring time.

14. (Canceled).

15. (Previously Presented) The device as recited in Claim 12, wherein the measuring voltage is recorded during the OFF phases.

16. (Previously Presented) The device as recited in Claim 12, wherein the constant current source is controlled as a function of a differential signal of a comparator resulting from the difference between the measuring voltage and a setpoint voltage.

17. (Previously Presented) The device as recited in Claim 12, wherein a plurality of pump cells is provided, and the outer electrode of each pump cell receives the pump current.

18. (Previously Presented) The device as recited in Claim 16, wherein air is present in the reference-gas space.

19. (Previously Presented) The device as recited in Claim 18, wherein the setpoint voltage is set to a value between 300 mV to 700 mV.

20. (Previously Presented) The device as recited in Claim 11, wherein the gas sensor device is an exhaust-gas sensor, and wherein the outer pump electrode and the diffusion barrier are exposed to the exhaust gas.

21. (Currently Amended) A device for operating a gas sensor, comprising:

a constant current source for supplying a pump current, wherein:
the constant current source is at least one of: a) configured to be set to at least two values of the pump current[[;]] and b) configured for alternating operation with including ON phases and OFF phases, with the duration of the ON phases and OFF phases being specified;

~~wherein for a fixed value of the pump current and a predefined duration of the ON phases and the OFF phases, the device is configured to predefine the number of ON phases and OFF phases, and~~

wherein the gas sensor includes:

a sensor chamber that receives via a diffusion barrier a gas to be analyzed;

at least one pump cell situated between the sensor chamber and the gas to be analyzed, wherein the at least one pump cell is exposed to the gas to be analyzed and includes an outer pump electrode;

a measuring electrode situated in the reference-gas space; and

a measuring cell situated between the sensor chamber and the reference-gas space, wherein the outer pump electrode of the pump cell exposed to the gas to be analyzed receives the pump current which depends on a measuring voltage that is applied to the measuring electrode situated in the reference-gas space.

22. (Previously Presented) The device as recited in Claim 21, wherein the constant current source specifies a positive polarity value and a negative polarity value for the pump current.

23. (Previously Presented) The device as recited in Claim 22, wherein the device is configured to determine an average of the pump current over a predefined measuring time.

24. (Canceled).

25. (Previously Presented) The device as recited in Claim 22, wherein the measuring voltage is recorded during the OFF phases.

26. (Previously Presented) The device as recited in Claim 22, wherein the constant current source is controlled as a function of a differential signal of a comparator resulting from the difference between the measuring voltage and a setpoint voltage.

27. (Previously Presented) The device as recited in Claim 22, wherein a plurality of pump cells is provided, and the outer electrode of each pump cell receives the pump current.

28. (Previously Presented) The device as recited in Claim 26, wherein the setpoint voltage is set to a value between 300 mV to 700 mV.

29. (Previously Presented) The device as recited in Claim 13, wherein the device is configured to determine the average pump current by varying the duration of at least one of the ON phases and OFF phases.

30-31. (Canceled).

32. (Previously Presented) The device as recited in Claim 23, wherein the device is configured to determine the average pump current by varying the duration of at least one of the ON phases and OFF phases.

33-34. (Canceled).

35. (Currently Amended) The device as recited in Claim 13, wherein the device is configured to determine the average pump current by varying the duration of at least one of the ON phases and OFF phases, and wherein a count of the number of ON phases or OFF phases within a predefined measuring time represents a direct measure for the pump current.

36. (Canceled).

37. (Previously Presented) The device as recited in Claim 13, wherein the constant current source specifies a positive polarity value and a negative polarity value for the pump current, wherein the device is configured to determine an average of the pump current over a predefined measuring time, and wherein the measuring voltage is recorded during the OFF phases.

38. (Previously Presented) The device as recited in Claim 37, wherein the constant current source is controlled as a function of a differential signal of a comparator resulting from the difference between the measuring voltage and a setpoint voltage, wherein a plurality of pump cells is provided, and the outer electrode of each pump cell receives the pump current, wherein air is present in the reference-gas space, wherein the setpoint voltage is set to a value between 300 mV to 700 mV, and wherein the gas sensor device is an exhaust-gas

sensor, and wherein the outer pump electrode and the diffusion barrier are exposed to the exhaust gas.

39. (Previously Presented) The device as recited in Claim 12, wherein the constant current source is controlled as a function of a differential signal of a comparator resulting from the difference between the measuring voltage and a setpoint voltage, wherein a plurality of pump cells is provided, and the outer electrode of each pump cell receives the pump current, wherein air is present in the reference-gas space, wherein the setpoint voltage is set to a value between 300 mV to 700 mV, and wherein the gas sensor device is an exhaust-gas sensor, and wherein the outer pump electrode and the diffusion barrier are exposed to the exhaust gas.

40. (Previously Presented) The device as recited in Claim 12, further comprising:
a sample-and-hold circuit, which is connected to the measuring electrode situated in the reference-gas space;
an analog-to-digital converter, which is in series with the sample-and-hold circuit; and
a comparator which receives a digitized voltage from the analog-to-digital converter.

41. (Previously Presented) The device as recited in Claim 21, further comprising:
a sample-and-hold circuit, which is connected to a measuring electrode situated in the reference-gas space;
an analog-to-digital converter, which is in series with the sample-and-hold circuit; and
a comparator which receives a digitized voltage from the analog-to-digital converter.